

CLAIMS

WE CLAIM

1. A slider assembly comprising a plurality of sliders bonded by a debondable solid encapsulant, wherein the encapsulant is comprised of a silicon-based polymer, each slider has a surface that is free from the encapsulant, and the encapsulant-free surfaces are coplanar to each other.
2. The slider assembly of claim 1, having a contiguous planar surface comprised of at least one encapsulant region and containing the coplanar slider surfaces.
3. The slider assembly of claim 2, wherein the sliders are arranged in an array.
4. The slider assembly of claim 3, wherein the array is a rectilinear array.
5. The slider assembly of claim 4, wherein the sliders do not contact each other.
6. The slider assembly of claim 4, wherein the coplanar surfaces of the sliders are each an air-bearing surface.
7. The slider assembly of claim 6, further comprising a substrate in contact with the air-bearing surfaces.

8. The slider assembly of claim 7, wherein the substrate is comprised of a laminate of a flexible tape and an adhesive, wherein the adhesive is in contact with the air-bearing surfaces.

9. The slider assembly of claim 8, wherein the adhesive is a pressure sensitive adhesive.

10. The slider assembly of claim 8, wherein the adhesive preferentially adheres to the tape over the air-bearing surfaces.

11. The slider assembly of claim 4, wherein the encapsulant is mechanically stable for thermal cycling from about 20°C to about 100°C.

12. The slider assembly of claim 4, wherein the encapsulant is rigid.

13. The slider assembly of claim 4, wherein the encapsulant does not substantially outgas under vacuum.

14. The slider assembly of claim 4, further comprising a carrier attached to the encapsulant and/or at least one slider, wherein the carrier does not cover any of the coplanar slider surfaces.

15. The slider assembly of claim 6, further comprising a resist layer on the air-bearing surfaces, wherein the encapsulant is mechanically stable upon exposure to the resist layer or any component thereof.

16. The slider assembly of claim 15, wherein the encapsulant is subject to solvation by a solvent not found in the resist layer.

17. The slider assembly of claim 16, wherein the solvent dissolves the silicon-based polymer.

18. The slider assembly of claim 17, wherein the solvent is comprised of propylene glycol methyl ether acetate and/or N-methylpyrrolidinone.

19. The slider assembly of claim 4, wherein the silicon-based polymer is prepared via *in situ* polymerization of organosilicon prepolymers.

20. The slider assembly of claim 19, wherein the organosilicon prepolymers have an average molecular weight less than about 1,000 Daltons.

21. The slider assembly of claim 19, wherein the silicon-based polymer is prepared in via *in situ* polymerization using an polymeric amine catalyst.

22. A method for forming a slider assembly, comprising:
 - (a) arranging a plurality of sliders each having a surface such that the surfaces are coplanar to each other;
 - (b) dispensing a silicon-based encapsulant fluid in a manner effective to bond the sliders without contacting the coplanar slider surfaces; and
 - (c) subjecting the dispensed encapsulant fluid to conditions effective for the fluid to form a debondable solid encapsulant comprising a silicon-based polymer.
23. The method of claim 22, wherein step (a) comprises placing the sliders on a laminate of a flexible tape and an adhesive such that slider surfaces contact the adhesive.
24. The method of claim 23, wherein the adhesive is resistant or impervious to solvation by the encapsulant fluid.
25. The method of claim 22, wherein the encapsulant fluid has an initial viscosity of no more than about 800 centistokes.
26. The method of claim 25, wherein the initial viscosity is no more than about 500 centistokes.
27. The method of claim 26, wherein the initial viscosity is about 20 to about 200 centistokes.

28. The method of claim 22, wherein step (c) comprises removing solvent from the encapsulant fluid.

29. The method of claim 22, wherein step (c) effecting crosslinking and/or polymerization in the encapsulant fluid.

30. A method for patterning an air-bearing surface of a slider, comprising:

- (a) applying a resist layer on an air-bearing surface of a slider, wherein at least a portion of the slider other than the air-bearing surface is encapsulated in a debondable solid encapsulant comprising a silicon-based polymer;
- (b) removing a portion of the resist layer to uncover a portion of the air-bearing surface in a patternwise manner; and
- (c) adding material to and/or removing material from the uncovered portion of the air-bearing surface, thereby patterning the air-bearing surface of the slider, wherein the encapsulant is mechanically stable upon exposure to any fluid employed in steps (a), (b), and/or (c).

31. The method of claim 30, further comprising, after step (a) and before step (b), exposing the resist layer to photons in the patternwise manner.